IN THE CLAIMS:

The following listing of claims will replace all prior versions and listings of claims in the Application.

Listing of Claims

1. (Previously Presented) A system for identifying pixels inside a graphics primitive of a raster image, the system comprising:

a memory for storing a raster image; and

a graphics engine coupled to the memory and comprising a pipeline structure, the pipeline structure comprising a first plurality of sequential logic circuits coupled in series and a second plurality of parallel logic circuits coupled to the first plurality of sequential logic circuits, each of the sequential logic circuits and each of the parallel logic circuits configured to receive a different polygonal portion of the raster image and to determine whether the received polygonal portion is at least partly inside the graphics primitive.

2. (Cancelled)

3. (Previously Presented) The system of claim 1 wherein the pipeline structure is further configured to divide the polygonal portion into a predetermined number of polygonal subportions if the polygonal portion is at least partly inside the graphics primitive.

4. (Previously Presented) The system of claim 1 wherein the pipeline structure determines whether the polygonal portion of the raster image is at least partly inside the graphics primitive by evaluating edge functions of the graphics primitive on at least one corner vertex of the polygonal portion.

5. (Previously Presented) The system of claim 4 wherein each edge function of the graphics primitive is a vector function comprising both an x-component and a y-component of a vector normal to the edge function.

6. (Previously Presented) The system of claim 4 wherein the edge functions are evaluated on at least one corner vertex of the polygonal portion to determine a corner vertex of the polygonal portion being farthest from a primitive edge associated with the edge function in a direction toward the inside of the graphics primitive.

7. (Previously Presented) The system of claim 1, wherein the sequential logic circuits are followed by the parallel logic circuits.

8. (Previously Presented) The system of claim 1, wherein the parallel logic circuits are coupled together in a pyramid structure.

9. (Previously Presented) The system of claim 3 wherein the predetermined number of polygonal subportions is two and the pipeline structure determines the two polygonal subportions by determining midpoint values of two opposite sides of the polygonal portion of the raster image and using the midpoint values as vertices of the two polygonal subportions.

10. (Previously Presented) The system of claim 1 wherein the pipeline structure further comprises a predetermined number of pixel engines coupled to at least some of the parallel logic circuits and configured to determine attribute values associated with each pixel.

11. (Original) The system of claim 1 wherein the polygonal portion of a raster image has a width ΔX and a height ΔY, each of the width ΔX and the height ΔY having a value of 2^m.

12. (Currently Amended)) A method of identifying pixels inside a graphics primitive of a raster image, comprising the steps of:

(a) determining whether a polygonal portion of the raster image is at least partly inside the graphics primitive by using a coordinate reference frame of the polygonal portion, the coordinate reference frame located at a geometric center of the polygonal portion;

(b) dividing the polygonal portion of the raster image into a predetermined number of polygonal subportions if the polygonal portion of the raster image is at least partly inside the graphics and relocating the coordinate reference frame to a geometric center of each polygonal subportion;

(c) determining whether each polygonal subportion of the raster image is at least partly inside the graphics primitive; and

(d) further dividing the polygonal subportion into a predetermined number of polygonal subportions if the polygonal subportion is at least partly inside the graphics primitive and is larger than a pixel and relocating the coordinate reference frame to a geometric center of each of the predetermined number of polygonal subportions.

13. (Original) The method of claim 12 further comprising the step of recursively performing (c) and (d) until there are no more polygonal subportions that are at least partly inside the graphics primitive.

14. (Previously Presented) The method of claim 12, wherein the determining step (a) further comprises the step of receiving a plurality of values for corner vertices of the polygonal portion and arithmetic edge functions, each of the arithmetic edge functions corresponding to an edge of the graphics primitive.

15. (Previously Presented) The method of claim 14, wherein the determining step (a) further comprises the step of evaluating an arithmetic edge function corresponding to an edge of the graphics primitive on at least one corner vertex of the polygonal portion to determine a corner vertex being farthest from the corresponding edge of the graphics primitive in a direction toward the inside of the graphics primitive.

16. (Original) The method of claim 15 wherein the polygonal portion is at least partly inside the graphics primitive if all arithmetic edge functions evaluated are positive.

17. (Previously Presented) The method of claim 12 wherein the dividing step (b) further comprises the step of dividing the polygonal portion into two polygonal subportions by determining midpoint values of two opposite sides of the polygonal portion.

18. (Original) The method of claim 12 wherein the dividing step (b) further comprises the step of sequentially deriving two new sets of arithmetic edge functions associated with a translated coordinate reference frame located at a geometric center of a corresponding one of the polygonal subportions.

19. (Previously Presented) The method of claim 12 wherein the dividing step (b) further comprises the step of outputting multiple sets of information, wherein each set of information includes corner vertices of one of the polygonal subportions and a corresponding new set of derived arithmetic edge functions defining the one polygonal subportion.

20. (Currently Amended) An electronically-readable medium having embodied thereon a program, the program being executable by a machine to perform method steps for identifying pixels inside graphics primitives of a raster image, the method steps comprising:

(a) determining whether a polygonal portion of the raster image is at least partly inside the graphics primitive by using a coordinate reference frame of the polygonal portion, the coordinate reference frame located at a geometric center of the polygonal portion;

(b) dividing the polygonal portion into a predetermined number of polygonal subportions if the polygonal portion is at least partly inside the graphics primitive and relocating the coordinate reference frame to a geometric center of each of the polygonal subportions;

(c) determining whether the polygonal subportion is at least partly inside the graphics primitive for each polygonal subportion; and

(d) dividing the polygonal subportion into a further predetermined number of polygonal subportions if the polygonal subportion is at least partly inside the graphics primitive and the polygonal subportion is larger than a pixel and relocating the coordinate reference frame to a geometric center of each of the further predetermined number of polygonal subportions.

21. (Original) The electronically-readable medium of claim 20 further comprising the step of recursively performing steps (c) and (d) for each polygonal subportion larger than a pixel that is at least partly inside the graphics primitive.

22. (Currently Amended) A method of identifying pixels inside a graphics primitive of a raster image comprising the steps of:

selecting a tile including a pixel;

defining a coordinate reference frame for the tile, the coordinate reference frame located at a geometric center of the tile;

determining if a portion of the tile is within the graphics primitive;

dividing the tile into subtiles if a portion of the tile is within the graphics primitive and an other portion of the tile is outside the graphics primitive;

relocating the coordinate reference frame to a geometric center of each of the subtiles; and

recursively dividing each subtile larger than a pixel and having a portion within the graphics primitive and an other portion outside the graphics primitive into further subtiles and relocating the coordinate reference frame to a geometric center of each of the further subtiles.

23. (Cancelled)

24. (Previously Presented) The method of claim 22 wherein the step of determining further comprises evaluating the tile at a corner vertex which is farthest in a direction toward the inside of the graphics primitive relative to an edge of the graphics primitive.

25. (Previously Presented) The method of claim 22 wherein the step of recursively dividing further comprises determining if the subtile is at least partly within the graphics primitive by evaluating the subtile at a corner vertex which is farthest in a direction toward the inside of the graphics primitive relative to an edge of the graphics primitive.

26. (Cancelled)

27. (Previously Presented) The electronically-readable medium of claim 20, wherein the polygonal portion is a tile and the polygonal subportion is a subtile.

28. (Previously Presented) A method of rasterizing a graphics primitive for a raster image, the method comprising the steps of:

deriving edge functions for the graphics primitive according to a coordinate reference frame of a tile in the raster image, the coordinate reference frame located at a geometric center of the tile, each edge function corresponding to an edge of the graphics primitive; and

evaluating each edge function on at least one vertex of the tile to determine at least one vertex of the tile inside the graphics primitive.

29. (Presently Amended) The method of claim 28, further comprising the steps of:

evaluating at least one edge function on at least one vertex of the tile to determine whether a portion of the tile is outside the graphics primitive;

dividing the tile into subtiles if a portion of the tile is inside the graphics primitive and a portion of the tile is outside the graphics primitive and relocating the coordinate reference frame to a geometric center of each subtile; and

dividing each subtile larger than a pixel and having a portion inside the graphics primitive and a portion outside the graphics primitive into further subtiles and relocating the coordinate reference frame to a geometric center of each of the further subtiles.